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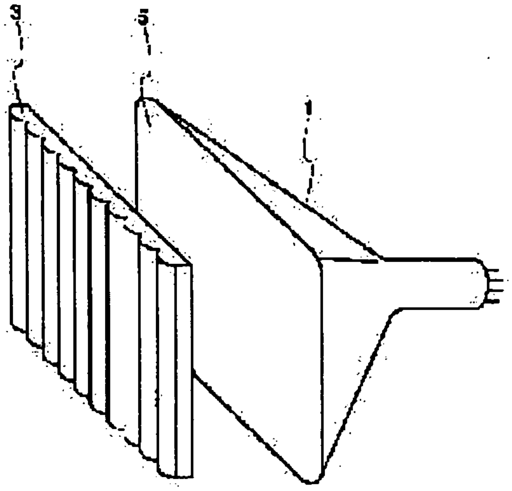
(54) DISPLAY DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a display device on which different images are displayed depending on a view angle.

SOLUTION: A lenticular lens 3 consisting of a plurality of cylindrical lenses extending longitudinally with respect to a display screen 5 of a monitor 1 is placed on the display screen 5. Two images are displayed on the display screen 5 while they are segmented in stripes, combined and arranged regularly in matching with each diameter of the cylindrical lenses of the lenticular lens 3. Any of the two images is selected and displayed on the display screen 5 of the monitor 1 through the lenticular lens 3 by changing a view angle.



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CLAIMS

[Claim(s)]

[Claim 1] An input means to be equipped with the single screen where the lenticular lens has been arranged, and to b the display with which the image which changes with directions of the look to view is displayed, and to input two or more video signals, From said two or more video signals which said input means inputted, it lets said lenticular lens pass. According to the direction of a look A processing means to generate the signal which defines the image display that the image which each aforementioned video signal defines changed and appears, A display equipped with an output means to output said signal generated with said processing means, and a display means to display said signal which was equipped with the screen where said lenticular lens has been arranged, and said output means outputted o said screen.

[Claim 2] A display equipped with a processing means generate the signal which defines the image with which the image which each aforementioned video signal defines is displayed by changing by the include angle which lets a lenticular lens pass and views from two or more of said video signals which an input means input two or more video signals, and said input means inputted, and an output means output said signal generated with said processing means

[Claim 3] It is the display according to claim 1 or 2 which said input means inputs the television signal for a multiple channel, and is characterized by what said processing means generates for the video signal which defines the image a which the image of each channel is displayed by changing with the include angle which lets said lenticular lens pass and is viewed from said television signal which said input means inputted.

[Claim 4] It is the display according to claim 1 or 2 characterized by what the video signal which defines the image a which the image which said two or more video signals define with the include angle which lets said lenticular lens p and is viewed from said video signal into which said input means inputted said processing means is displayed by changing is generated for by said input means inputting two or more video signals.

[Claim 5] Said input means by performing said program memorized by a storage means to memorize the program which generates two or more video signals which define two or more images, and this storage means It has a generat means to generate the video signal which defines said two or more images. Said processing means The display according to claim 1 or 2 characterized by what the video signal of an image with which the image which said two o more video signals define is displayed by changing by the include angle which lets said lenticular lens pass and is viewed from said video signal which said generation means generated is generated for.

[Claim 6] It is the display according to claim 5 which said storage means memorizes the program of a waging-war mold game, and is characterized by what said generation means generates for the video signal which defines the ima in the look of waging-war person each according to advance of said waging-war mold game.

[Claim 7] It is the display according to claim 5 which said storage means memorizes the program of a waging-war mold game, and is characterized by what said generation means generates for the video signal which defines the ima which includes information to hide from a partner about each set game person according to advance of said waging-w mold game.

[Claim 8] Said processing means is a display given in claim 1 characterized by what a means to start each of two or more images defined by the signal inputted by said input means in the shape of a stripe, and to arrange it regularly, a a means to generate the signal for displaying the arranged image are included for thru/or any 1 term of 7.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the display which can display a different image according to the direction to view.
[0002]
[Description of the Prior Art] The television set which can display the image of two or more channels on one screen known. However, in order that two or more screens (image) might go into coincidence in this kind of television set a visual field, it was difficult to concentrate and see a channel to see.
[0003] Moreover, though it is a waging-war mold, since the TV game of the conventional waging-war mold showed the image seen from the same view, it had the problem that presence was missing. Although it is possible to express image as each waging-war person's view since this problem is solved, in having displayed them on the same screen, presence will be spoiled on the contrary. Moreover, if two screens are arranged, game equipment will be enlarged an cost will increase.
[0004] Moreover, like the mah-jongg game, each set game person needs two or more screens, and game equipment enlarged him and he had the problem that cost increased to display the contents hidden from the partner.
[0005] This invention was made in view of the above-mentioned actual condition, and aims at offering the display which can display a different image in the different direction using a single screen. Moreover, this invention aims at offering the display which can display the image according to the direction to view.
[0006]
[Means for Solving the Problem] In order to attain the above-mentioned purpose, the display concerning the 1st viewpoint of this invention An input means to be equipped with the single screen where the lenticular lens has been arranged, and to be the display with which the image which changes with directions of the look to view is displayed, and to input two or more video signals, From said two or more video signals which said input means inputted, it lets said lenticular lens pass. According to the direction of a look A processing means to generate the signal which define the image displayed that the image which each aforementioned video signal defines changed and appears, It is characterized by having an output means to output said signal generated with said processing means, and a display means to display said signal which was equipped with the screen where said lenticular lens has been arranged, and sa output means outputted on said screen.
[0007] According to this display, though it is a single screen physically, an image changes according to the direction view. Therefore, two or more men can enjoy the image of arbitration, without interfering mutually using a single screen. Moreover, it is also possible to display two or more images to hide [each other] from a partner, the image fr which a viewpoint differs, and it is suitable as displays, such as television of many channels, and a TV game.
[0008] Moreover, the display concerning the 2nd viewpoint of this invention With the include angle which lets a lenticular lens pass and is viewed from said two or more video signals which an input means to input two or more video signals, and said input means inputted It is characterized by having a processing means to generate the signal which defines the image with which the image which each aforementioned video signal defines is displayed by changing, and an output means to output said signal generated with said processing means.
[0009] According to this display, the image whose image changes and is visible to a single screen like the display of the 1st invention according to the include angle (direction) to see can be displayed by supplying the output signal of output means to display means, such as the exterior.
[0010] Said input means may input the television signal for a multiple channel. In this case, the signal which defines the image displayed that as for said processing means the image of each channel changes and is in sight from said inputted television signal with the include angle which let pass and looks at said lenticular lens is generated.
[0011] According to this indicating equipment, the image of a different channel is displayed by the direction to see. Therefore, only the image of a self favorite channel can be appreciated intensively, displaying two or more images o

one screen at coincidence.

[0012] Said input means may input two or more video signals. Moreover, the image displayed that as for said processing means the image which said two or more video signals define changes, and is in sight with the include an which lets said lenticular lens pass and is seen from said video signal which said input means inputted may be generated.

[0013] According to this indicating equipment, the image of a different video signal is displayed by the direction to s Therefore, in spite of displaying two or more images on one screen, only the image of self favorite video can be appreciated intensively.

[0014] Said input means by performing said program memorized by a storage means to memorize the program whic generates two or more video signals which define two or more images, and this storage means You may have a generation means to generate the video signal which defines said two or more images. Moreover, said processing means The image displayed that the image which said two or more video signals define changes, and is in sight with the include angle which lets said lenticular lens pass and is seen from said video signal which said generation means generated may be generated.

[0015] For example, said storage means may memorize the program of a waging-war mold game, and said generatio means may generate the video signal which defines the image in the look of waging-war person each according to advance of said waging-war mold game.

[0016] In such a display, each set game person can check existence of a partner and a situation by each look within a game, and can perform the game which is full of presence.

[0017] Said storage means may memorize the program of a waging-war mold game, and said generation means may generate the video signal which defines an image including information to hide from a partner about each set game person according to advance of said waging-war mold game.

[0018] According to this display, an image including information to hide from a partner can be displayed on each set game person. Therefore, it can display also in the game which uses the screen which includes information not to sho partner like the hand of a mah-jongg game, or a starting hand.

[0019] Said processing means may also include a means to generate the signal for starting each of two or more imag defined by the signal inputted by said input means in the shape of a stripe, arranging regularly, and displaying the arranged image.

[0020]

[Embodiment of the Invention] The display which can display the screen which changed hereafter with directions which try to start the gestalt of implementation of this invention is explained.

[0021] (Gestalt of the 1st operation) The television set concerning the gestalt of implementation of the 1st of this invention is hereafter explained with reference to drawing 1 - drawing 5 . As the television set of the gestalt of this operation is shown in drawing 1 , the screen itself can display the image of the channel of arbitration on the method o the forward right, and the method of the forward left according to an individual, though it is one.

[0022] Drawing 1 shows the configuration of the monitoring device 1 used for this television set. This monitoring device 1 is equipped with a display screen 5, and the lenticular lens 3 is arranged on the display screen 5. This lenticular lens 3 consists of two or more cylindrical lenses extended to a lengthwise direction, and that flat side side i attached in the display screen 5.

[0023] In displaying the image for two screens using this monitoring device 1, according to the path of the cylindrica lens of the lenticular lens 3, a stripe-like image is regularly arranged to the display screen 5 of a monitoring device 1 and it displays it on it.

[0024] For example, in order to let the lenticular lens 3 pass and to display the image shown in drawing 2 (a) and (b) the method of the forward left, and the method of the forward right, respectively, as shown in drawing 2 (c), each image is cut down in the shape of a stripe, is arranged, and is expressed as the width of face according to the path of cylindrical lens. Thus, by displaying, it is refracted with the lenticular lens 3 and a display image is displayed, as sho to drawing 2 (d) in a sectional view, the image of drawing 2 (a) appears from the method L of the forward left of a screen, and the image of drawing 2 (b) appears from the method R of the forward right of a screen.

[0025] Below, drawing 3 shows the circuitry of the television set of the gestalt of this operation. Here, in order to ma an understanding easy, let the image which can see the image which can be seen from the method of the forward left through a lenticular lens from a left screen and the method of the forward right be a right screen.

[0026] As shown in drawing 3 , this television set consists of a monitoring device 1, a switch 10, an antenna 11, a tun 12, the IF circuit 13, the chroma circuit 14, a controller 15, a frame memory 16, the display processor 17, the display frame memory 18, the display controller 19, the voice output circuit 20, a voice output terminal 21, a video input terminal 25, and a voice input terminal 26.

[0027] A switch 10 is equipped with a power button, a right-and-left channel carbon button, etc. A power button performs ON of a power source, and OFF by the push operation. A left channel carbon button chooses the display channel of a left screen, and supplies channel signaling to a controller 15. A right channel carbon button chooses the display channel of a right screen, and supplies channel signaling to a controller 15.

[0028] An antenna 11 receives a RF (RF) signal.

[0029] A tuner 12 has tuner 12L for left screens, and tuner 12R for right screens, according to the tuning signal from controller 15, out of the high frequency signal received with the antenna 11, it tunes up the television signal for reception, changes it into IF (intermediate frequency) signal, and supplies them to the IF circuit 13, respectively.

[0030] The IF circuit 13 has IF circuit 13L for left screens, and IF circuit 13R for right screens, and divides the IF signal from tuner 12L for left screens, and tuner 12for right screens R into a Y/C signal, a sound signal, and a synchronizing signal, respectively. A sound signal is supplied to the voice output circuit 20, and a synchronizing sign is supplied for the separated Y/C signal to the chroma circuit 14 at a controller 15.

[0031] The chroma circuit 14 is equipped with chroma circuit 14L for left screens, and chroma circuit 14R for right screens. Chroma circuit 14L for left screens changes into the luminance signal of red (R), green (G), and each blue (B color component the Y/C signal supplied from IF circuit 13for left screens L, further, carries out A/D (analog digital conversion of these luminance signals, and changes them into the brightness data RL, GL, and BL. Chroma circuit 1 for right screens changes into the luminance signal of each color component of R, G, and B the Y/C signal supplied from IF circuit 13for right screens R, further, carries out A/D conversion of these luminance signals, and changes the into the brightness data RR, GR, and BR.

[0032] A controller 15 supplies the tuning signal which directs tuning of the directed channel to a tuner 12 according the channel signaling supplied by the push operation of the channel carbon button of a switch 10. Moreover, accordi to the synchronizing signal supplied from IF circuit 13L for left screens, and IF circuit 13for right screens R, the control signal for writing data in frame memories 16L and 16R is supplied.

[0033] It consists of multiport memories etc., and it becomes [read-out] independent of writing and is possible, and has frame memory 16L for left screens, and frame memory 16R for right screens, and, as for a frame memory 16, the brightness data RL and GL of R, G, and B which were generated by chroma circuit 14L for left screens and chroma circuit 14R for right screens, BL;RR, and GR and BR are memorized, respectively.

[0034] The brightness data for two screens stored in frame memory 16L for left screens and frame memory 16R for right screens are compounded to the data which can be seen from a different direction through the lenticular lens 3, a shown in drawing 2 , and the display processor 17 writes them in the display frame memory 18. A synthetic approac mentioned later.

[0035] The display frame memory 18 stores each data of R, G, and B which were compounded by the display proces 17.

[0036] The display controller 19 is beginning to read each data of R, G, and B which are stored in the display frame memory 18 one by one, and is made to display it on a monitoring device 1.

[0037] The voice output circuit 20 has voice output circuit 20L for left screens, and voice output circuit 20R for righ screens, carries out the frequency recovery of the sound signal supplied from the IF circuit 13, and supplies it to voic output terminal 21L for left screens, and voice output terminal 21R for right screens.

[0038] The video input terminal 25 has video input terminal 25L for left screens, and video input terminal 25R for ri screens, and in case it inputs a video signal (video signal) from the outside, they are used for it. The voice input terminal 26 has voice input terminal 26L for left screens, and voice input terminal 26R for right screens, and inputs a sound signal from the exterior.

[0039] Next, actuation of the television set which has an above-mentioned configuration is explained with reference drawing 3 - drawing 5 . In addition, the power source shall be turned on. The user who watches television from the method L of the forward left operates a left channel carbon button, and doubles a channel with the TV program whic user wants to watch, for example, a station while broadcasting a baseball relay broadcast.

[0040] Moreover, the user who watches television from the method R of the forward right operates a right channel carbon button, and doubles a channel with the TV program which a user wants to watch, for example, a station while broadcasting news.

[0041] A controller 15 supplies the tuning signal which directs reception of the channel chosen as tuner 12L for left screens with the left channel carbon button. Tuner 12L for left screens answers a tuning signal, tunes up the televisio signal of the channel which the user chose, generates the IF signal for left screens, and supplies it to IF circuit 13L fo left screens. IF circuit 13L for left screens separates a Y/C signal, a sound signal, and a synchronizing signal from th IF signal for left screens. A sound signal is supplied to voice output circuit 20L for left screens, and a synchronizing signal is supplied for the separated Y/C signal to a controller 15 at chroma circuit 14L for left screens, respectively.

[0042] Voice output circuit 20L for left screens restores to the sound signal supplied from IF circuit 13for left screen L, and supplies it to voice output terminal 21L. Chroma circuit 14L for left screens changes into the brightness data R GL, and BL for left screens of R, G, and B each color the Y/C signal supplied from IF circuit 13for left screens L, an supplies it to frame memory 16L for left screens. On the other hand, a controller 15 supplies a write address and a w control signal to frame memory 16L for left screens according to the synchronizing signal supplied from IF circuit 13for left screens L.

[0043] Frame memory 16L for left screens carries out sequential preservation of the brightness data RL, GL, and BL for left screens in the location specified in the write-in address according to a write-in control signal.

[0044] Similarly, a controller 15 supplies the tuning signal which directs reception of the channel chosen as tuner 12 for right screens with the right channel carbon button. Tuner 12R for right screens answers a tuning signal, tunes up television signal of the channel which the user chose, generates the IF signal for right screens, and supplies it to IF circuit 13R for right screens. IF circuit 13R for right screens separates a Y/C signal, a sound signal, and a synchronizing signal from the IF signal for right screens. A sound signal is supplied to voice output circuit 20R for right screens, and a synchronizing signal is supplied for the separated Y/C signal to a controller 15 at chroma circuit 14R for right screens, respectively.

[0045] Voice output circuit 20R for right screens restores to the sound signal supplied from IF circuit 13for right screens R, and supplies it to voice output terminal 21R. Chroma circuit 14R for right screens changes into the brightness data RR, GR, and BR for right screens of R, G, and B each color the Y/C signal supplied from IF circuit 13for right screens R, and supplies it to frame memory 16R for right screens. On the other hand, a controller 15 supplies a write address and a write control signal to frame memory 16R for right screens according to the synchronizing signal supplied from IF circuit 13for right screens R.

[0046] Frame memory 16R for right screens carries out sequential preservation of the brightness data RR, GR, and B for right screens in the location specified in the write-in address according to a write-in control signal.

[0047] The display processor 17 is compounded in the image with which the screen which changed with directions which look at the brightness data (RL, GL, BL;RR, GR, BR) stored in frame memory 16L for left screens and frame memory 16R for right screens through the lenticular lens 3 is displayed. This image cuts down the original brightnes data shown in drawing 2 (a) and (b) in the shape of a stripe, and is formed by arranging regularly, as shown in drawi 2 (c).

[0048] This synthetic approach is explained along with the flow chart of drawing 4 . The display processor 17 sets initial value 1 to the pointer i showing the number of the stripe cut down from the brightness data RL and RR in orde to create the complex data of R component (step S11).

[0049] The display processor 17 cuts down the i-th stripe-like data RLi from the brightness data RL memorized by frame memory 16L for left screens (step S12). As this stripe-like data RLi is shown in drawing 5 (a), an X-axis coordinate is data with which the Y-axis coordinate is stored in the field from 0 to K from ((i-1) -n/2) to (i.n/2). Here is the number of pixels equivalent to the path of the cylindrical lens of the lenticular lens 3.

[0050] The display processor 17 develops the cut-down stripe-like data to the field from 0 to K at Y shaft orientation from ((i-1) -n) to (((i-1) -n)+n/2) to X shaft orientations of the storing field of the complex data of R component on t display frame memory 18, as shown in drawing 5 (b) (step S13). Next, the display processor 17 cuts down the i-th stripe-like data RRi from the brightness data RR memorized by frame memory 16R for right screens (step S14). As shown in drawing 5 (a), the X-axis coordinate of the brightness data RR of this stripe-like data RRi is data with whic the Y-axis coordinate is stored in the field from 0 to K from (((i-1) -n)+n/2) to (i.n/2).

[0051] The display processor 17 develops the cut-down stripe-like data to the field from 0 to K from (((i-1) -n)+n/2) (i-n) at Y shaft orientations to X shaft orientations of the storing field of the complex data of R component on the display frame memory 18, as shown in drawing 5 (b) (step S15).

[0052] Next, the display processor 17 distinguishes whether the value of Pointer i has become the count N of logging stripe-like data (the number of the cylindrical lenses which constitute the lenticular lens 3) (step S16). When it is judged that it has not reached, 1 is added to Pointer i (step S17), a return is carried out to step S12, the following strip like data are cut down from the brightness data RL and RR, and the actuation developed to the display frame memor 18 is repeated (step S12 - step S16).

[0053] Logging and expansion of stripe-like data are repeated N times, if the data with which the stripe-like data of t data RL and RR as shown in the storing field of complex data at drawing 5 (b) were arranged in order are completed step S16, it will be distinguished that the value of Pointer i reached the reference value N, and a flow will progress to step S18.

[0054] At step S18, about the brightness data GL and GR of G color component, the same merge as **** is perform and the complex data of G color component is created. About logging and the extended position of the data of the brightness data GL and GR, it is the same as that of the processing which followed the brightness data RL and RR.

[0055] If the complex data of G component is completed, about the brightness data BL and BR of B color componen the display processor 17 will perform same merge and will create the complex data of B component (step S19). Composition of data will be ended if the complex data of B color component is completed.

[0056] The display controller 19 supplies as reading the data of each color of R, G, and B which are stored in the display frame memory 18 and which were compounded to a monitoring device 1 one by one. A monitoring device 1 displays the data of each color supplied from the display controller 19 on the display screen 5. The image displayed i an image with which the image of the baseball relay broadcast chosen with the left channel carbon button and the image of the news chosen with the right channel carbon button are arranged in the shape of a stripe, as shown in drawing 2 (a) - (c). Therefore, as shown in drawing 2 (d), from the method of the forward right, the image of news is displayed for the image of a baseball relay broadcast on the method of the forward left, respectively.

[0057] As explained above, the television set of the gestalt of this operation has the circuit structure for two screens, according to the path of the cylindrical lens of a lenticular lens, starts the image for two screens for a stripe, and arranges and shows it. Therefore, the image of the channel which changed with directions which watch this televisio set through a lenticular lens is displayed.

[0058] Although the above explanation explained the television set which displays an image at coincidence to both t left screen and the right screen, it is good also as the ability only of one of screens to be displayed. In this case, the display switch which directs whether display an image on a switch 10 at each of a left screen and a right screen, for example is arranged. A controller 15 operates the circuit for screens where "the display" was directed by the display switch, and stops the circuit for the screens of another side.

[0059] For example, when displaying only a left screen, the display of a left screen is directed with a display switch, and a halt of a display of a right screen is directed. A controller 15 supplies the enable signal which directs actuation tuner 12L for left screens, IF circuit 13L for left screens, chroma circuit 14L for left screens, and voice output circuit 20L for left screens, and supplies the disable signal which forbids actuation at tuner 12R for right screens, IF circuit 13R for right screens, and chroma circuit 14R for right screens. Therefore, brightness data are stored in frame memo 16for left screens L, and the brightness data in which brightness 0 is shown are stored in frame memory 16for right screens R.

[0060] The display processor 17 compounds frame memory 16L for left screens, and the data stored in frame memor 16R for right screens. Therefore, an image is displayed on the left screen of a monitoring device 1, and a right screen maintained by the dark condition.

[0061] As compared with the case where such a configuration, then both screens are always displayed, power consumption can be stopped and degradation of the display screen can be reduced.

[0062] Moreover, although the above explanation explained the example which displays the received television broadcasting, this indicating equipment can also display the video signal reproduced from the video tape, LD (laser disk), DVD (digital video disc), etc.

[0063] In this case, if needed, a user connects video outlet terminals, such as a videocassette recorder, to video input terminal 25L for left screens and video input terminal 25R for right screens which are shown in drawing 3 , respectively, and connects a voice output terminal to them at voice input terminal 26L for left screens, and voice inp terminal 26R for right screens. Moreover, a video input is directed from a switch 10.

[0064] According to directions, a controller 15 supplies a disable signal to a tuner 12, and suspends actuation. On the other hand, the object for left screens and the IF circuits 13L and 13R for right screens process by inputting a video signal from the object for left screens, and the video input terminals 25L and 25R for right screens, respectively, and dissociates and they output a synchronizing signal, a Y/C signal, and a sound signal to a corresponding circuit. Moreover, the object for left screens and the voice output circuits 20L and 20R for right screens output the sound sig which inputted the sound signal and was recovered from the object for left screens, and the voice input terminals 26L and 26R for right screens, respectively.

[0065] In addition, it is also possible to display a TV signal on one side of a left screen and a right screen, and to display a video signal on another side. In this case, a controller 15 performs a setup required for playback of a video signal, and a setup required for playback of a TV signal according to directions of a switch 10, respectively. For example, in displaying a TV signal on a left screen and displaying a video signal on a right screen, according to the directions from a switch 10, a controller 15 outputs an enable signal to tuner 12L for left screens, and outputs a disab signal to tuner 12R for right screens. IF circuit 13L for left screens processes the video signal supplied from tuner 12 and IF circuit 13R for right screens processes the video signal supplied from video input terminal 25for right screens

[0066] (Gestalt of the 2nd operation) Although the gestalt of the 1st operation explained the display of two screens which display a television signal and a video signal, it is also possible to display images, such as a game, on this display. Hereafter, the gestalt of the operation of game equipment which has such a function is explained.

[0067] The circuitry of the game equipment of the gestalt of this operation is shown in drawing 6 . This game equipment consists of a monitoring device 1, the switch section 31, a control section 32, memory 33, a frame memor 16, the display processor 17, a display frame memory 18, a display controller 19, and a voice output circuit 20 so tha may illustrate. Here, a monitoring device 1, a frame memory 16 and the display processor 17, the display frame memory 18, the display controller 19, and the voice output circuit 20 have the same circuitry as circuitry explained using drawing 3 .

[0068] The switch section 31 has switch section 31L for left screens, and switch section 31R for right screen display and is equipped with a carbon button respectively required for advance of games, such as a power button, an arrowhead carbon button, and a decision carbon button.

[0069] Memory 33 consists of a cassette, CD-ROM equipment, etc. containing ROM which stored program data, suc as a versus fighting game, and the program for games which a control section 32 performs is memorized.

[0070] A control section 32 is equipped with CPU, performs the program stored in memory 33, advances a game according to actuation of the switch section 31, and writes the image according to advance of a game in frame memo 16L for left screens, and frame memory 16R for right screens.

[0071] Next, actuation of the game equipment which has an above-mentioned configuration is explained with referen to drawing 7 . A control section 32 will start the processing shown in drawing 7 , if a power source is switched on. First, a control section 32 detects the actuation condition of the switch section 31 (step S21). Next, the program store in memory 33 is performed according to the actuation situation of the switch section 31, and ******, such as selectio advance, etc. of a game, are advanced according to actuation of the switch section 31 (step S22). Next, according to advance of a game, the image for the object for left screens and right screens is written in frame memory 16L for left screens, and frame memory 16R for right screens, respectively (steps S23 and S24). Above-mentioned actuation is repeatedly performed until a power source is turned off.

[0072] According to such a configuration, while the game along the Ruhr of mah-jongg is performed, the screen from the view of those who are playing the game is written in frame 16L for left screens by actuation of the switch section 31, looking at a left screen and a game looks at a right screen by it at step S21 for example, in the case of a mah-jong game etc., the screen from the view of those who are playing the game is written in frame 16R for right screens. For example, self hand and starting hand, and the contents of TSUMO are in sight, and a partner's hand and starting hand and the contents of TSUMO are in the turned-down condition, and an image is written in frame memory 16for left screens L so that only a motion of a tile can be seen.

[0073] Moreover, the screen from people's view that the game is playing the game while running each game person's vehicle at step S21 in the rate, the direction, etc. according to actuation of the switch section 31 in the case of a racin game etc., going on a game and looking at a left screen is written in frame 16L for left screens, and the screen from t view of those who are playing the game is written in frame 16R for right screens, looking at a right screen. While tho who are playing the game while following, for example, looking at a left screen look at a right screen, when running point of those who are playing the game, in frame memory 16for left screens L, the image of the head section of a se car and the course of a circuit is written, and the sight of its back of a car which dies the point is written in frame memory 16for right screens R at it.

[0074] Moreover, the screen from people's view that in the case of the fighting game etc. the game is playing the gam while it is step S21, for example, each player performs actuation according to actuation of each switch section 31, advances a game and looks at a left screen is written in frame 16L for left screens, and the screen from the view of th player which is playing the game is written in frame 16R for right screens, looking at a right screen. Therefore, a motion of the fighting house of those who are playing the game on the right screen is written in frame memory 16for left screens L, and a motion of the fighting house of those who are playing the game on the left screen is conversely written in frame memory 16for right screens R.

[0075] The display processor 17 is compounded by the approach which explained the brightness data stored in frame memory 16L for left screens, and frame memory 16R for right screens with reference to drawing 4 and drawing 5 , a the same approach, and is developed to the display frame memory 18.

[0076] The display controller 19 is beginning to read brightness data one by one from the display frame memory 18, and supplies them to a monitoring device 1, and a monitoring device 1 displays this. The image which a monitoring device 1 displays on the display screen 5 The image written in frame memory 16L for left screens and frame memory 16R for right screens is an image arranged in the shape of a stripe, and the lenticular lens 3 is minded. Only the imag written in frame memory 16L for left screens is displayed on the player of the method of the forward left, only the image written in frame memory 16R for right screens is displayed on the player of the method of the forward right, a for each player, only the screen for selves appears, and it cannot see the screen for waging-war partners. Therefore, i the case of a mah-jongg game etc., each player can be played by a partner's starting hand etc. being in the condition which hide and is not in sight, although a self starting hand etc. is in sight. Moreover, in the case of a racing game, a fighting game, etc., a game can be performed, looking at a motion of a partner.

[0077] As explained above, in case this game equipment performs the game of a waging-war mold, it can advance a game, looking at the image of a proper to each.

[0078] Moreover, the game which is full of presence can be performed, checking existence of a partner and a situatio since a game can be displayed from a different view using one monitoring device 1.

[0079] Moreover, not only the game program for performing a game but the program which draws a drama (the so-called zapping drama) which was drawn from a different view, for example may be used for the program stored in memory 33.

[0080] (Gestalt of the 3rd operation) Although the gestalt of the 1st operation explained the television set which displays the channel which changed with directions to see and the gestalt of the 2nd operation explained with it the game equipment which advances the game from a different view, considering as a common system is also possible.

[0081] The display which has such a function is explained with reference to drawing 8 . As shown in drawing 8 , this indicating equipment consists of a monitoring device 1, the switch section 31, a changeover switch 41, the control processing section 42, a frame memory 16, the display processor 17, a display frame memory 18, a display controlle 19, and a voice output circuit 20.

[0082] A monitoring device 1, a frame memory 16, the display processor 17, the display frame memory 18, the displ controller 19, and the voice output circuit 20 are substantially [as the structure explained using drawing 3] the same Moreover, the switch section 31 is substantially [as the structure explained using drawing 6] the same.

[0083] A changeover switch 41 answers the change of a switch, supplies the enable signal which makes actuation possible at one side of control processing section 42A for television, and control processing section 42B for games, a supplies the disenabled signal which forbids actuation to another side.

[0084] Control processing section 42A for television is equipped with the antenna 11 of drawing 3 , a tuner 12, the IF circuit 13, the chroma circuit 14, and a controller 15, follows actuation of the switch section 31, receives and reproduces a TV signal and writes the image of television for two channels in a frame memory 16. Moreover, contro processing section 42B for games has the control section 32 of drawing 6 , and the configuration of memory 33, performs the program memorized by memory 33, advances a game, and writes the image for each players in a frame memory 16.

[0085] When you watch television using this indicating equipment, a receiving channel etc. is chosen from the switc section 31 while choosing television with a changeover switch 41. An enable signal is supplied to control processing section 42A for television from a changeover switch 41 by this selection actuation, and a disenabled signal is supplie to control processing section 42B for games. Answering an enable signal, it is the approach explained using drawing and the same approach, and control processing section 42A for television receives the specified channel, and writes t image in a frame memory 16. Future composition, display processing, etc. are the same as processing of the gestalt o the above-mentioned 1st and the 2nd operation.

[0086] Moreover, when playing a game, it is a changeover switch 41 and a game is chosen. An enable signal is supplied to control processing section 42B for games from a changeover switch 41 by this push operation, and a disenabled signal is supplied to control processing section 42A for television. Control processing section 42B for games answers actuation of the switch section 31, performs a game program, and displays the display image to each player on a frame memory 16. Future composition, display processing, etc. are the same as processing of the gestalt the above-mentioned 1st and the 2nd operation.

[0087] As explained above, according to the indicating equipment of the gestalt of this operation, television and a ga can be changed to arbitration and, moreover, the two contents can be substantially expressed as one screen.

[0088] The gestalt of the 1st, the 2nd, and the 3rd operation explained the display equipped with the display monitor However, this invention is not limited to this. For example, by supplying as an adapter the circuit shown in drawing drawing 6 , drawing 8 , etc., connecting a domestic television set etc. to this adapter, and attaching a lenticular lens in that television set, you may constitute so that a right-and-left screen can be displayed.

[0089] In this case, for example, the control processing section 42, a frame memory 16, the display processor 17, the display frame memory 18, the display controller 19, and the voice output circuit 20 are arranged in the case of an adapter, switches 31 and 41 are connected to a case in the configuration of drawing 8 , and the output terminal of the display controller 19 is constituted possible [connection with a television set etc.]. Moreover, a lenticular lens is attached in screens, such as a television set, using adhesive tape etc.

[0090] Such a configuration, then only when required, this adapter can be connected to television, and television and game can be enjoyed. And the two contents can be substantially expressed as one screen.

[0091] In addition, this invention is not limited to the gestalt of the above-mentioned implementation, but various deformation and application are possible for it. For example, the display device of arbitration, such as a television (T receiving set, a CRT (Cathode Ray Tube) monitor, and LCD (Liquid Crystal Display), PDP (Plasma DisplayPanel), be used for a monitoring device 1. It doubles with the specification of the display device to be used, and the display controller 19 is chosen and adjusted.

[0092] In addition, the art of a stripe-like image is not limited to the gestalt of the above-mentioned implementation, but can be changed into arbitration. For example, the logging location of a stripe-like image, width of face, a number an extended position, etc. can be suitably set up according to two or more images (image) to display. For example, width of face of each stripe-like image may be made smaller than one half of the paths of the cylindrical lens of the lenticular lens 3. In this case, the gap of arbitration can be arranged between each extended position of a stripe-like image. When changing such arrangement, then the sense of a look, while an image and an image change, a null part

arises, and the change rate of an image becomes clear. Moreover, that the logging location of a stripe-like image can set as arbitration, you may start without a gap, and spacing of arbitration may be set and started.
[0093] Moreover, the number of the screens to display may not be limited to two, but three or more are sufficient as For example, a different image may be made to be displayed in the time of seeing a physical screen from the method the forward right, a transverse plane, and the method of the forward left. In this case, what is necessary is just to arrange regularly so that the image which developed three images to the frame memory, started this in the shape of a stripe, and was cut down from three images to one cylindrical lens may counter.
[0094] Moreover, the circuitry shown in drawing 3 , drawing 6 , drawing 8 , etc. can be changed into arbitration. For example, with the configuration of drawing 3 , although the luminance signal was changed into the digital signal in t chroma circuit 14, an input signal may be changed into a digital signal as it is, and digital signal processing may be performed.
[0095] Moreover, it prepares frame memory 16L for left screens, and two sets frame memory 16R for right screens a time, respectively, and the display processor 17 reads data from one side of the two sets, and the chroma circuit 14 writes brightness data in another side, writes in for every frame, and reads with an object, and you may make it chan the target memory. The situation which reads the data in the middle of such a configuration, then write-in can be prevented, and the image of high quality can be displayed. Moreover, two display frame memories 18 are also forme and the display processor 17 writes data in one side, and data are read from another side, the display controller 19 writes in for every frame, and reads with an object, and you may make it change the target memory.
[0096] Moreover, a circuit may be shared, although the circuit of drawing 3 and drawing 6 classified and showed the circuit for left screens, and the circuit for right screens in order to make an understanding easy (communalization). A part of circuit of control processing section 42A for television of the circuit of drawing 8 and control processing sect 42B for games may be made to share.
[0097] In addition, the display and adapter of this invention cannot be based on the system of dedication, but can be realized using the usual computer system. For example, the display which performs above-mentioned processing can constituted by installing this program from the media (a floppy disk, CD-ROM, etc.) which stored the program for performing above-mentioned actuation in the computer equipped with the reception function of television.
[0098] Moreover, communication media (medium which holds a program temporarily and fluidly like a communication line, a communication network, and communication system) are sufficient as the medium for supply a program to a computer. For example, this program may be put up for the notice plate (BBS) of a communication network, and this may be distributed through a network. And above-mentioned processing can be performed by start this program and performing like other application programs under control of OS.
[0099]
[Effect of the Invention] As explained above, according to this invention, a display and an adapter which the screen o the channel which changed with directions seen through a lenticular lens displays can be offered. Moreover, accordin to the display of this invention, a game can be advanced while a waging-war person looks at the image from each vie

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[Translation done.]

* NOTICES *

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the display which can display a different image according to the direction to view.

[Translation done.]

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EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, according to this invention, a display and an adapter which the screen o the channel which changed with directions seen through a lenticular lens displays can be offered. Moreover, accordin to the display of this invention, a game can be advanced while a waging-war person looks at the image from each vie

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TECHNICAL PROBLEM

[Description of the Prior Art] The television set which can display the image of two or more channels on one screen known. However, in order that two or more screens (image) might go into coincidence in this kind of television set a visual field, it was difficult to concentrate and see a channel to see.
[0003] Moreover, though it is a waging-war mold, since the TV game of the conventional waging-war mold showed the image seen from the same view, it had the problem that presence was missing. Although it is possible to express image as each waging-war person's view since this problem is solved, in having displayed them on the same screen, presence will be spoiled on the contrary. Moreover, if two screens are arranged, game equipment will be enlarged an cost will increase.
[0004] Moreover, like the mah-jongg game, each set game person needs two or more screens, and game equipment enlarged him and he had the problem that cost increased to display the contents hidden from the partner.
[0005] This invention was made in view of the above-mentioned actual condition, and aims at offering the display which can display a different image in the different direction using a single screen. Moreover, this invention aims at offering the display which can display the image according to the direction to view.

[Translation done.]

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MEANS

[Means for Solving the Problem] In order to attain the above-mentioned purpose, the display concerning the 1st viewpoint of this invention An input means to be equipped with the single screen where the lenticular lens has been arranged, and to be the display with which the image which changes with directions of the look to view is displayed, and to input two or more video signals, From said two or more video signals which said input means inputted, it lets said lenticular lens pass. According to the direction of a look A processing means to generate the signal which define the image displayed that the image which each aforementioned video signal defines changed and appears, It is characterized by having an output means to output said signal generated with said processing means, and a display means to display said signal which was equipped with the screen where said lenticular lens has been arranged, and sa output means outputted on said screen.
[0007] According to this display, though it is a single screen physically, an image changes according to the direction view. Therefore, two or more men can enjoy the image of arbitration, without interfering mutually using a single screen. Moreover, it is also possible to display two or more images to hide [each other] from a partner, the image fr which a viewpoint differs, and it is suitable as displays, such as television of many channels, and a TV game.
[0008] Moreover, the display concerning the 2nd viewpoint of this invention With the include angle which lets a lenticular lens pass and is viewed from said two or more video signals which an input means to input two or more video signals, and said input means inputted It is characterized by having a processing means to generate the signal which defines the image with which the image which each aforementioned video signal defines is displayed by changing, and an output means to output said signal generated with said processing means.
[0009] According to this display, the image whose image changes and is visible to a single screen like the display of the 1st invention according to the include angle (direction) to see can be displayed by supplying the output signal of output means to display means, such as the exterior.
[0010] Said input means may input the television signal for a multiple channel. In this case, the signal which defines the image displayed that as for said processing means the image of each channel changes and is in sight from said inputted television signal with the include angle which let pass and looks at said lenticular lens is generated.
[0011] According to this indicating equipment, the image of a different channel is displayed by the direction to see. Therefore, only the image of a self favorite channel can be appreciated intensively, displaying two or more images o one screen at coincidence.
[0012] Said input means may input two or more video signals. Moreover, the image displayed that as for said processing means the image which said two or more video signals define changes, and is in sight with the include an which lets said lenticular lens pass and is seen from said video signal which said input means inputted may be generated.
[0013] According to this indicating equipment, the image of a different video signal is displayed by the direction to s Therefore, in spite of displaying two or more images on one screen, only the image of self favorite video can be appreciated intensively.
[0014] Said input means by performing said program memorized by a storage means to memorize the program whic generates two or more video signals which define two or more images, and this storage means You may have a generation means to generate the video signal which defines said two or more images. Moreover, said processing means The image displayed that the image which said two or more video signals define changes, and is in sight with the include angle which lets said lenticular lens pass and is seen from said video signal which said generation means generated may be generated.
[0015] For example, said storage means may memorize the program of a waging-war mold game, and said generatio means may generate the video signal which defines the image in the look of waging-war person each according to advance of said waging-war mold game.
[0016] In such a display, each set game person can check existence of a partner and a situation by each look within a game, and can perform the game which is full of presence.

[0017] Said storage means may memorize the program of a waging-war mold game, and said generation means may generate the video signal which defines an image including information to hide from a partner about each set game person according to advance of said waging-war mold game.

[0018] According to this display, an image including information to hide from a partner can be displayed on each set game person. Therefore, it can display also in the game which uses the screen which includes information not to sho partner like the hand of a mah-jongg game, or a starting hand.

[0019] Said processing means may also include a means to generate the signal for starting each of two or more imag defined by the signal inputted by said input means in the shape of a stripe, arranging regularly, and displaying the arranged image.

[0020]

[Embodiment of the Invention] The display which can display the screen which changed hereafter with directions which try to start the gestalt of implementation of this invention is explained.

[0021] (Gestalt of the 1st operation) The television set concerning the gestalt of implementation of the 1st of this invention is hereafter explained with reference to drawing 1 - drawing 5 . As the television set of the gestalt of this operation is shown in drawing 1 , the screen itself can display the image of the channel of arbitration on the method o the forward right, and the method of the forward left according to an individual, though it is one.

[0022] Drawing 1 shows the configuration of the monitoring device 1 used for this television set. This monitoring device 1 is equipped with a display screen 5, and the lenticular lens 3 is arranged on the display screen 5. This lenticular lens 3 consists of two or more cylindrical lenses extended to a lengthwise direction, and that flat side side i attached in the display screen 5.

[0023] In displaying the image for two screens using this monitoring device 1, according to the path of the cylindrica lens of the lenticular lens 3, a stripe-like image is regularly arranged to the display screen 5 of a monitoring device 1 and it displays it on it.

[0024] For example, in order to let the lenticular lens 3 pass and to display the image shown in drawing 2 (a) and (b) the method of the forward left, and the method of the forward right, respectively, as shown in drawing 2 (c), each image is cut down in the shape of a stripe, is arranged, and is expressed as the width of face according to the path of cylindrical lens. Thus, by displaying, it is refracted with the lenticular lens 3 and a display image is displayed, as sho to drawing 2 (d) in a sectional view, the image of drawing 2 (a) appears from the method L of the forward left of a screen, and the image of drawing 2 (b) appears from the method R of the forward right of a screen.

[0025] Below, drawing 3 shows the circuitry of the television set of the gestalt of this operation. Here, in order to ma an understanding easy, let the image which can see the image which can be seen from the method of the forward left through a lenticular lens from a left screen and the method of the forward right be a right screen.

[0026] As shown in drawing 3 , this television set consists of a monitoring device 1, a switch 10, an antenna 11, a tun 12, the IF circuit 13, the chroma circuit 14, a controller 15, a frame memory 16, the display processor 17, the display frame memory 18, the display controller 19, the voice output circuit 20, a voice output terminal 21, a video input terminal 25, and a voice input terminal 26.

[0027] A switch 10 is equipped with a power button, a right-and-left channel carbon button, etc. A power button performs ON of a power source, and OFF by the push operation. A left channel carbon button chooses the display channel of a left screen, and supplies channel signaling to a controller 15. A right channel carbon button chooses the display channel of a right screen, and supplies channel signaling to a controller 15.

[0028] An antenna 11 receives a RF (RF) signal.

[0029] A tuner 12 has tuner 12L for left screens, and tuner 12R for right screens, according to the tuning signal from controller 15, out of the high frequency signal received with the antenna 11, it tunes up the television signal for reception, changes it into IF (intermediate frequency) signal, and supplies them to the IF circuit 13, respectively.

[0030] The IF circuit 13 has IF circuit 13L for left screens, and IF circuit 13R for right screens, and divides the IF signal from tuner 12L for left screens, and tuner 12for right screens R into a Y/C signal, a sound signal, and a synchronizing signal, respectively. A sound signal is supplied to the voice output circuit 20, and a synchronizing sign is supplied for the separated Y/C signal to the chroma circuit 14 at a controller 15.

[0031] The chroma circuit 14 is equipped with chroma circuit 14L for left screens, and chroma circuit 14R for right screens. Chroma circuit 14L for left screens changes into the luminance signal of red (R), green (G), and each blue (B color component the Y/C signal supplied from IF circuit 13for left screens L, further, carries out A/D (analog digital conversion of these luminance signals, and changes them into the brightness data RL, GL, and BL. Chroma circuit 1 for right screens changes into the luminance signal of each color component of R, G, and B the Y/C signal supplied from IF circuit 13for right screens R, further, carries out A/D conversion of these luminance signals, and changes the into the brightness data RR, GR, and BR.

[0032] A controller 15 supplies the tuning signal which directs tuning of the directed channel to a tuner 12 according the channel signaling supplied by the push operation of the channel carbon button of a switch 10. Moreover, accordi to the synchronizing signal supplied from IF circuit 13L for left screens, and IF circuit 13for right screens R, the control signal for writing data in frame memories 16L and 16R is supplied.

[0033] It consists of multiport memories etc., and it becomes [read-out] independent of writing and is possible, and has frame memory 16L for left screens, and frame memory 16R for right screens, and, as for a frame memory 16, the brightness data RL and GL of R, G, and B which were generated by chroma circuit 14L for left screens and chroma circuit 14R for right screens, BL;RR, and GR and BR are memorized, respectively.

[0034] The brightness data for two screens stored in frame memory 16L for left screens and frame memory 16R for right screens are compounded to the data which can be seen from a different direction through the lenticular lens 3, a shown in drawing 2 , and the display processor 17 writes them in the display frame memory 18. A synthetic approac mentioned later.

[0035] The display frame memory 18 stores each data of R, G, and B which were compounded by the display proces 17.

[0036] The display controller 19 is beginning to read each data of R, G, and B which are stored in the display frame memory 18 one by one, and is made to display it on a monitoring device 1.

[0037] The voice output circuit 20 has voice output circuit 20L for left screens, and voice output circuit 20R for righ screens, carries out the frequency recovery of the sound signal supplied from the IF circuit 13, and supplies it to voic output terminal 21L for left screens, and voice output terminal 21R for right screens.

[0038] The video input terminal 25 has video input terminal 25L for left screens, and video input terminal 25R for ri screens, and in case it inputs a video signal (video signal) from the outside, they are used for it. The voice input terminal 26 has voice input terminal 26L for left screens, and voice input terminal 26R for right screens, and inputs a sound signal from the exterior.

[0039] Next, actuation of the television set which has an above-mentioned configuration is explained with reference drawing 3 - drawing 5 . In addition, the power source shall be turned on. The user who watches television from the method L of the forward left operates a left channel carbon button, and doubles a channel with the TV program whic user wants to watch, for example, a station while broadcasting a baseball relay broadcast.

[0040] Moreover, the user who watches television from the method R of the forward right operates a right channel carbon button, and doubles a channel with the TV program which a user wants to watch, for example, a station while broadcasting news.

[0041] A controller 15 supplies the tuning signal which directs reception of the channel chosen as tuner 12L for left screens with the left channel carbon button. Tuner 12L for left screens answers a tuning signal, tunes up the televisio signal of the channel which the user chose, generates the IF signal for left screens, and supplies it to IF circuit 13L fo left screens. IF circuit 13L for left screens separates a Y/C signal, a sound signal, and a synchronizing signal from th IF signal for left screens. A sound signal is supplied to voice output circuit 20L for left screens, and a synchronizing signal is supplied for the separated Y/C signal to a controller 15 at chroma circuit 14L for left screens, respectively.

[0042] Voice output circuit 20L for left screens restores to the sound signal supplied from IF circuit 13for left screen L, and supplies it to voice output terminal 21L. Chroma circuit 14L for left screens changes into the brightness data R GL, and BL for left screens of R, G, and B each color the Y/C signal supplied from IF circuit 13for left screens L, an supplies it to frame memory 16L for left screens. On the other hand, a controller 15 supplies a write address and a wr control signal to frame memory 16L for left screens according to the synchronizing signal supplied from IF circuit 13for left screens L.

[0043] Frame memory 16L for left screens carries out sequential preservation of the brightness data RL, GL, and BL for left screens in the location specified in the write-in address according to a write-in control signal.

[0044] Similarly, a controller 15 supplies the tuning signal which directs reception of the channel chosen as tuner 12 for right screens with the right channel carbon button. Tuner 12R for right screens answers a tuning signal, tunes up television signal of the channel which the user chose, generates the IF signal for right screens, and supplies it to IF circuit 13R for right screens. IF circuit 13R for right screens separates a Y/C signal, a sound signal, and a synchronizing signal from the IF signal for right screens. A sound signal is supplied to voice output circuit 20R for right screens, and a synchronizing signal is supplied for the separated Y/C signal to a controller 15 at chroma circuit 14R for right screens, respectively.

[0045] Voice output circuit 20R for right screens restores to the sound signal supplied from IF circuit 13for right screens R, and supplies it to voice output terminal 21R. Chroma circuit 14R for right screens changes into the brightness data RR, GR, and BR for right screens of R, G, and B each color the Y/C signal supplied from IF circuit 13for right screens R, and supplies it to frame memory 16R for right screens. On the other hand, a controller 15 supplies a write address and a write control signal to frame memory 16R for right screens according to the synchronizing signal supplied from IF circuit 13for right screens R.

[0046] Frame memory 16R for right screens carries out sequential preservation of the brightness data RR, GR, and B for right screens in the location specified in the write-in address according to a write-in control signal.

[0047] The display processor 17 is compounded in the image with which the screen which changed with directions which look at the brightness data (RL, GL, BL;RR, GR, BR) stored in frame memory 16L for left screens and frame memory 16R for right screens through the lenticular lens 3 is displayed. This image cuts down the original brightnes data shown in drawing 2 (a) and (b) in the shape of a stripe, and is formed by arranging regularly, as shown in drawi 2 (c).

[0048] This synthetic approach is explained along with the flow chart of drawing 4 . The display processor 17 sets initial value 1 to the pointer i showing the number of the stripe cut down from the brightness data RL and RR in orde to create the complex data of R component (step S11).

[0049] The display processor 17 cuts down the i-th stripe-like data RLi from the brightness data RL memorized by frame memory 16L for left screens (step S12). As this stripe-like data RLi is shown in drawing 5 (a), an X-axis coordinate is data with which the Y-axis coordinate is stored in the field from 0 to K from ((i-1) -n/2) to (i.n/2). Here is the number of pixels equivalent to the path of the cylindrical lens of the lenticular lens 3.

[0050] The display processor 17 develops the cut-down stripe-like data to the field from 0 to K at Y shaft orientation from ((i-1) -n) to (((i-1) -n)+n/2) to X shaft orientations of the storing field of the complex data of R component on t display frame memory 18, as shown in drawing 5 (b) (step S13). Next, the display processor 17 cuts down the i-th stripe-like data RRi from the brightness data RR memorized by frame memory 16R for right screens (step S14). As shown in drawing 5 (a), the X-axis coordinate of the brightness data RR of this stripe-like data RRi is data with whic the Y-axis coordinate is stored in the field from 0 to K from (((i-1) -n)+n/2) to (i.n/2).

[0051] The display processor 17 develops the cut-down stripe-like data to the field from 0 to K from (((i-1) -n)+n/2) (i-n) at Y shaft orientations to X shaft orientations of the storing field of the complex data of R component on the display frame memory 18, as shown in drawing 5 (b) (step S15).

[0052] Next, the display processor 17 distinguishes whether the value of Pointer i has become the count N of logging stripe-like data (the number of the cylindrical lenses which constitute the lenticular lens 3) (step S16). When it is judged that it has not reached, 1 is added to Pointer i (step S17), a return is carried out to step S12, the following strip like data are cut down from the brightness data RL and RR, and the actuation developed to the display frame memor 18 is repeated (step S12 - step S16).

[0053] Logging and expansion of stripe-like data are repeated N times, if the data with which the stripe-like data of t data RL and RR as shown in the storing field of complex data at drawing 5 (b) were arranged in order are completed step S16, it will be distinguished that the value of Pointer i reached the reference value N, and a flow will progress to step S18.

[0054] At step S18, about the brightness data GL and GR of G color component, the same merge as **** is perform and the complex data of G color component is created. About logging and the extended position of the data of the brightness data GL and GR, it is the same as that of the processing which followed the brightness data RL and RR.

[0055] If the complex data of G component is completed, about the brightness data BL and BR of B color componen the display processor 17 will perform same merge and will create the complex data of B component (step S19). Composition of data will be ended if the complex data of B color component is completed.

[0056] The display controller 19 supplies as reading the data of each color of R, G, and B which are stored in the display frame memory 18 and which were compounded to a monitoring device 1 one by one. A monitoring device 1 displays the data of each color supplied from the display controller 19 on the display screen 5. The image displayed i an image with which the image of the baseball relay broadcast chosen with the left channel carbon button and the image of the news chosen with the right channel carbon button are arranged in the shape of a stripe, as shown in drawing 2 (a) - (c). Therefore, as shown in drawing 2 (d), from the method of the forward right, the image of news is displayed for the image of a baseball relay broadcast on the method of the forward left, respectively.

[0057] As explained above, the television set of the gestalt of this operation has the circuit structure for two screens, according to the path of the cylindrical lens of a lenticular lens, starts the image for two screens for a stripe, and arranges and shows it. Therefore, the image of the channel which changed with directions which watch this televisio set through a lenticular lens is displayed.

[0058] Although the above explanation explained the television set which displays an image at coincidence to both t left screen and the right screen, it is good also as the ability only of one of screens to be displayed. In this case, the display switch which directs whether display an image on a switch 10 at each of a left screen and a right screen, for example is arranged. A controller 15 operates the circuit for screens where "the display" was directed by the display switch, and stops the circuit for the screens of another side.

[0059] For example, when displaying only a left screen, the display of a left screen is directed with a display switch, and a halt of a display of a right screen is directed. A controller 15 supplies the enable signal which directs actuation tuner 12L for left screens, IF circuit 13L for left screens, chroma circuit 14L for left screens, and voice output circuit 20L for left screens, and supplies the disable signal which forbids actuation at tuner 12R for right screens, IF circuit 13R for right screens, and chroma circuit 14R for right screens. Therefore, brightness data are stored in frame memo

16for left screens L, and the brightness data in which brightness 0 is shown are stored in frame memory 16for right screens R.

[0060] The display processor 17 compounds frame memory 16L for left screens, and the data stored in frame memor 16R for right screens. Therefore, an image is displayed on the left screen of a monitoring device 1, and a right screen maintained by the dark condition.

[0061] As compared with the case where such a configuration, then both screens are always displayed, power consumption can be stopped and degradation of the display screen can be reduced.

[0062] Moreover, although the above explanation explained the example which displays the received television broadcasting, this indicating equipment can also display the video signal reproduced from the video tape, LD (laser disk), DVD (digital video disc), etc.

[0063] In this case, if needed, a user connects video outlet terminals, such as a videocassette recorder, to video input terminal 25L for left screens and video input terminal 25R for right screens which are shown in drawing 3 , respectively, and connects a voice output terminal to them at voice input terminal 26L for left screens, and voice inp terminal 26R for right screens. Moreover, a video input is directed from a switch 10.

[0064] According to directions, a controller 15 supplies a disable signal to a tuner 12, and suspends actuation. On the other hand, the object for left screens and the IF circuits 13L and 13R for right screens process by inputting a video signal from the object for left screens, and the video input terminals 25L and 25R for right screens, respectively, and dissociates and they output a synchronizing signal, a Y/C signal, and a sound signal to a corresponding circuit. Moreover, the object for left screens and the voice output circuits 20L and 20R for right screens output the sound sig which inputted the sound signal and was recovered from the object for left screens, and the voice input terminals 26L and 26R for right screens, respectively.

[0065] In addition, it is also possible to display a TV signal on one side of a left screen and a right screen, and to display a video signal on another side. In this case, a controller 15 performs a setup required for playback of a video signal, and a setup required for playback of a TV signal according to directions of a switch 10, respectively. For example, in displaying a TV signal on a left screen and displaying a video signal on a right screen, according to the directions from a switch 10, a controller 15 outputs an enable signal to tuner 12L for left screens, and outputs a disab signal to tuner 12R for right screens. IF circuit 13L for left screens processes the video signal supplied from tuner 12 and IF circuit 13R for right screens processes the video signal supplied from video input terminal 25for right screens

[0066] (Gestalt of the 2nd operation) Although the gestalt of the 1st operation explained the display of two screens which display a television signal and a video signal, it is also possible to display images, such as a game, on this display. Hereafter, the gestalt of the operation of game equipment which has such a function is explained.

[0067] The circuitry of the game equipment of the gestalt of this operation is shown in drawing 6 . This game equipment consists of a monitoring device 1, the switch section 31, a control section 32, memory 33, a frame memor 16, the display processor 17, a display frame memory 18, a display controller 19, and a voice output circuit 20 so tha may illustrate. Here, a monitoring device 1, a frame memory 16 and the display processor 17, the display frame memory 18, the display controller 19, and the voice output circuit 20 have the same circuitry as circuitry explained using drawing 3 .

[0068] The switch section 31 has switch section 31L for left screens, and switch section 31R for right screen display and is equipped with a carbon button respectively required for advance of games, such as a power button, an arrowhead carbon button, and a decision carbon button.

[0069] Memory 33 consists of a cassette, CD-ROM equipment, etc. containing ROM which stored program data, suc as a versus fighting game, and the program for games which a control section 32 performs is memorized.

[0070] A control section 32 is equipped with CPU, performs the program stored in memory 33, advances a game according to actuation of the switch section 31, and writes the image according to advance of a game in frame memo 16L for left screens, and frame memory 16R for right screens.

[0071] Next, actuation of the game equipment which has an above-mentioned configuration is explained with referen to drawing 7 . A control section 32 will start the processing shown in drawing 7 , if a power source is switched on. First, a control section 32 detects the actuation condition of the switch section 31 (step S21). Next, the program store in memory 33 is performed according to the actuation situation of the switch section 31, and ******, such as selectio advance, etc. of a game, are advanced according to actuation of the switch section 31 (step S22). Next, according to advance of a game, the image for the object for left screens and right screens is written in frame memory 16L for left screens, and frame memory 16R for right screens, respectively (steps S23 and S24). Above-mentioned actuation is repeatedly performed until a power source is turned off.

[0072] According to such a configuration, while the game along the Ruhr of mah-jongg is performed, the screen from the view of those who are playing the game is written in frame 16L for left screens by actuation of the switch section 31, looking at a left screen and a game looks at a right screen by it at step S21 for example, in the case of a mah-jong game etc., the screen from the view of those who are playing the game is written in frame 16R for right screens. For example, self hand and starting hand, and the contents of TSUMO are in sight, and a partner's hand and starting hand and the contents of TSUMO are in the turned-down condition, and an image is written in frame memory 16for left screens L so that only a motion of a tile can be seen.

[0073] Moreover, the screen from people's view that the game is playing the game while running each game person's vehicle at step S21 in the rate, the direction, etc. according to actuation of the switch section 31 in the case of a racin game etc., going on a game and looking at a left screen is written in frame 16L for left screens, and the screen from t view of those who are playing the game is written in frame 16R for right screens, looking at a right screen. While tho who are playing the game while following, for example, looking at a left screen look at a right screen, when running point of those who are playing the game, in frame memory 16for left screens L, the image of the head section of a se car and the course of a circuit is written, and the sight of its back of a car which dies the point is written in frame memory 16for right screens R at it.

[0074] Moreover, the screen from people's view that in the case of the fighting game etc. the game is playing the gam while it is step S21, for example, each player performs actuation according to actuation of each switch section 31, advances a game and looks at a left screen is written in frame 16L for left screens, and the screen from the view of th player which is playing the game is written in frame 16R for right screens, looking at a right screen. Therefore, a motion of the fighting house of those who are playing the game on the right screen is written in frame memory 16for left screens L, and a motion of the fighting house of those who are playing the game on the left screen is conversely written in frame memory 16for right screens R.

[0075] The display processor 17 is compounded by the approach which explained the brightness data stored in frame memory 16L for left screens, and frame memory 16R for right screens with reference to drawing 4 and drawing 5 , a the same approach, and is developed to the display frame memory 18.

[0076] The display controller 19 is beginning to read brightness data one by one from the display frame memory 18, and supplies them to a monitoring device 1, and a monitoring device 1 displays this. The image which a monitoring device 1 displays on the display screen 5 The image written in frame memory 16L for left screens and frame memory 16R for right screens is an image arranged in the shape of a stripe, and the lenticular lens 3 is minded. Only the imag written in frame memory 16L for left screens is displayed on the player of the method of the forward left, only the image written in frame memory 16R for right screens is displayed on the player of the method of the forward right, a for each player, only the screen for selves appears, and it cannot see the screen for waging-war partners. Therefore, i the case of a mah-jongg game etc., each player can be played by a partner's starting hand etc. being in the condition which hide and is not in sight, although a self starting hand etc. is in sight. Moreover, in the case of a racing game, a fighting game, etc., a game can be performed, looking at a motion of a partner.

[0077] As explained above, in case this game equipment performs the game of a waging-war mold, it can advance a game, looking at the image of a proper to each.

[0078] Moreover, the game which is full of presence can be performed, checking existence of a partner and a situatio since a game can be displayed from a different view using one monitoring device 1.

[0079] Moreover, not only the game program for performing a game but the program which draws a drama (the so-called zapping drama) which was drawn from a different view, for example may be used for the program stored in memory 33.

[0080] (Gestalt of the 3rd operation) Although the gestalt of the 1st operation explained the television set which displays the channel which changed with directions to see and the gestalt of the 2nd operation explained with it the game equipment which advances the game from a different view, considering as a common system is also possible.

[0081] The display which has such a function is explained with reference to drawing 8 . As shown in drawing 8 , this indicating equipment consists of a monitoring device 1, the switch section 31, a changeover switch 41, the control processing section 42, a frame memory 16, the display processor 17, a display frame memory 18, a display controlle 19, and a voice output circuit 20.

[0082] A monitoring device 1, a frame memory 16, the display processor 17, the display frame memory 18, the displ controller 19, and the voice output circuit 20 are substantially [as the structure explained using drawing 3] the same Moreover, the switch section 31 is substantially [as the structure explained using drawing 6] the same.

[0083] A changeover switch 41 answers the change of a switch, supplies the enable signal which makes actuation possible at one side of control processing section 42A for television, and control processing section 42B for games, a supplies the disenabled signal which forbids actuation to another side.

[0084] Control processing section 42A for television is equipped with the antenna 11 of drawing 3 , a tuner 12, the IF circuit 13, the chroma circuit 14, and a controller 15, follows actuation of the switch section 31, receives and reproduces a TV signal and writes the image of television for two channels in a frame memory 16. Moreover, contro processing section 42B for games has the control section 32 of drawing 6 , and the configuration of memory 33, performs the program memorized by memory 33, advances a game, and writes the image for each players in a frame memory 16.

[0085] When you watch television using this indicating equipment, a receiving channel etc. is chosen from the switc section 31 while choosing television with a changeover switch 41. An enable signal is supplied to control processing section 42A for television from a changeover switch 41 by this selection actuation, and a disenabled signal is supplie to control processing section 42B for games. Answering an enable signal, it is the approach explained using drawing and the same approach, and control processing section 42A for television receives the specified channel, and writes t image in a frame memory 16. Future composition, display processing, etc. are the same as processing of the gestalt o the above-mentioned 1st and the 2nd operation.

[0086] Moreover, when playing a game, it is a changeover switch 41 and a game is chosen. An enable signal is supplied to control processing section 42B for games from a changeover switch 41 by this push operation, and a disenabled signal is supplied to control processing section 42A for television. Control processing section 42B for games answers actuation of the switch section 31, performs a game program, and displays the display image to each player on a frame memory 16. Future composition, display processing, etc. are the same as processing of the gestalt the above-mentioned 1st and the 2nd operation.

[0087] As explained above, according to the indicating equipment of the gestalt of this operation, television and a ga can be changed to arbitration and, moreover, the two contents can be substantially expressed as one screen.

[0088] The gestalt of the 1st, the 2nd, and the 3rd operation explained the display equipped with the display monitor However, this invention is not limited to this. For example, by supplying as an adapter the circuit shown in drawing drawing 6 , drawing 8 , etc., connecting a domestic television set etc. to this adapter, and attaching a lenticular lens in that television set, you may constitute so that a right-and-left screen can be displayed.

[0089] In this case, for example, the control processing section 42, a frame memory 16, the display processor 17, the display frame memory 18, the display controller 19, and the voice output circuit 20 are arranged in the case of an adapter, switches 31 and 41 are connected to a case in the configuration of drawing 8 , and the output terminal of the display controller 19 is constituted possible [connection with a television set etc.]. Moreover, a lenticular lens is attached in screens, such as a television set, using adhesive tape etc.

[0090] Such a configuration, then only when required, this adapter can be connected to television, and television and game can be enjoyed. And the two contents can be substantially expressed as one screen.

[0091] In addition, this invention is not limited to the gestalt of the above-mentioned implementation, but various deformation and application are possible for it. For example, the display device of arbitration, such as a television (T receiving set, a CRT (Cathode Ray Tube) monitor, and LCD (Liquid Crystal Display), PDP (Plasma DisplayPanel), be used for a monitoring device 1. It doubles with the specification of the display device to be used, and the display controller 19 is chosen and adjusted.

[0092] In addition, the art of a stripe-like image is not limited to the gestalt of the above-mentioned implementation, but can be changed into arbitration. For example, the logging location of a stripe-like image, width of face, a number an extended position, etc. can be suitably set up according to two or more images (image) to display. For example, width of face of each stripe-like image may be made smaller than one half of the paths of the cylindrical lens of the lenticular lens 3. In this case, the gap of arbitration can be arranged between each extended position of a stripe-like image. When changing such arrangement, then the sense of a look, while an image and an image change, a null part arises, and the change rate of an image becomes clear. Moreover, that the logging location of a stripe-like image can set as arbitration, you may start without a gap, and spacing of arbitration may be set and started.

[0093] Moreover, the number of the screens to display may not be limited to two, but three or more are sufficient as For example, a different image may be made to be displayed in the time of seeing a physical screen from the method the forward right, a transverse plane, and the method of the forward left. In this case, what is necessary is just to arrange regularly so that the image which developed three images to the frame memory, started this in the shape of a stripe, and was cut down from three images to one cylindrical lens may counter.

[0094] Moreover, the circuitry shown in drawing 3 , drawing 6 , drawing 8 , etc. can be changed into arbitration. For example, with the configuration of drawing 3 , although the luminance signal was changed into the digital signal in t chroma circuit 14, an input signal may be changed into a digital signal as it is, and digital signal processing may be performed.

[0095] Moreover, it prepares frame memory 16L for left screens, and two sets frame memory 16R for right screens a time, respectively, and the display processor 17 reads data from one side of the two sets, and the chroma circuit 14 writes brightness data in another side, writes in for every frame, and reads with an object, and you may make it chan the target memory. The situation which reads the data in the middle of such a configuration, then write-in can be prevented, and the image of high quality can be displayed. Moreover, two display frame memories 18 are also forme and the display processor 17 writes data in one side, and data are read from another side, the display controller 19 writes in for every frame, and reads with an object, and you may make it change the target memory.

[0096] Moreover, a circuit may be shared, although the circuit of drawing 3 and drawing 6 classified and showed the

circuit for left screens, and the circuit for right screens in order to make an understanding easy (communalization). A part of circuit of control processing section 42A for television of the circuit of drawing 8 and control processing sect 42B for games may be made to share.
[0097] In addition, the display and adapter of this invention cannot be based on the system of dedication, but can be realized using the usual computer system. For example, the display which performs above-mentioned processing can constituted by installing this program from the media (a floppy disk, CD-ROM, etc.) which stored the program for performing above-mentioned actuation in the computer equipped with the reception function of television.
[0098] Moreover, communication media (medium which holds a program temporarily and fluidly like a communication line, a communication network, and communication system) are sufficient as the medium for supply a program to a computer. For example, this program may be put up for the notice plate (BBS) of a communication network, and this may be distributed through a network. And above-mentioned processing can be performed by start this program and performing like other application programs under control of OS.

[Translation done.]

* NOTICES *

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1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is drawing showing an example of the display of this invention.
[Drawing 2] It is drawing for explaining how displaying two or more images through a lenticular lens, and drawing showing the condition that drawing showing the image which can see from the right drawing showing the image whi can see (a) from the left, and (b), and (c) put the lenticular lens on the compound image, and (d) are the sectional vie of (c).
[Drawing 3] It is drawing showing the configuration of the 1st of the television set of the gestalt of operation of this invention.
[Drawing 4] It is a flow chart for explaining the merge performed with a television set.
[Drawing 5] (a) is drawing for explaining an approach cutting down the data for performing merge. (b) is drawing fo explaining how the image of the shape of a started stripe should stick.
[Drawing 6] It is drawing showing the configuration of the 2nd of the game equipment of the gestalt of operation of this invention.
[Drawing 7] It is the flow chart which shows actuation of the game equipment shown in drawing 6 .
[Drawing 8] It is drawing showing the configuration of the 3rd of the display of the gestalt of operation of this invention.
[Description of Notations]
1 Monitoring Device
3 Lenticular Lens
5 Display Screen
10 Switch
11 Antenna
12 Tuner
13 IF Circuit
14 Chroma Circuit
15 Controller
16 Frame Memory
17 Display Processor
18 Display Frame Memory
19 Display Controller
20 Voice Output Circuit
21 Voice Output Terminal
25 Video Input Terminal
26 Voice Input Terminal
31 Switch Section
32 Control Section
33 Memory
41 Changeover Switch
42 Control Processing Section

[Translation done.]

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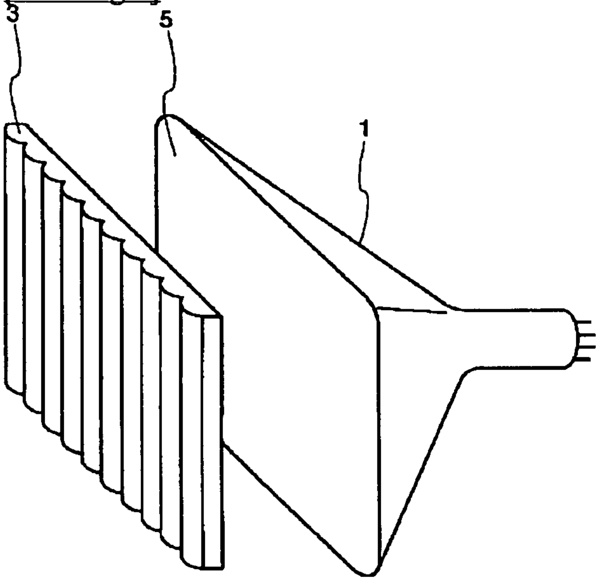
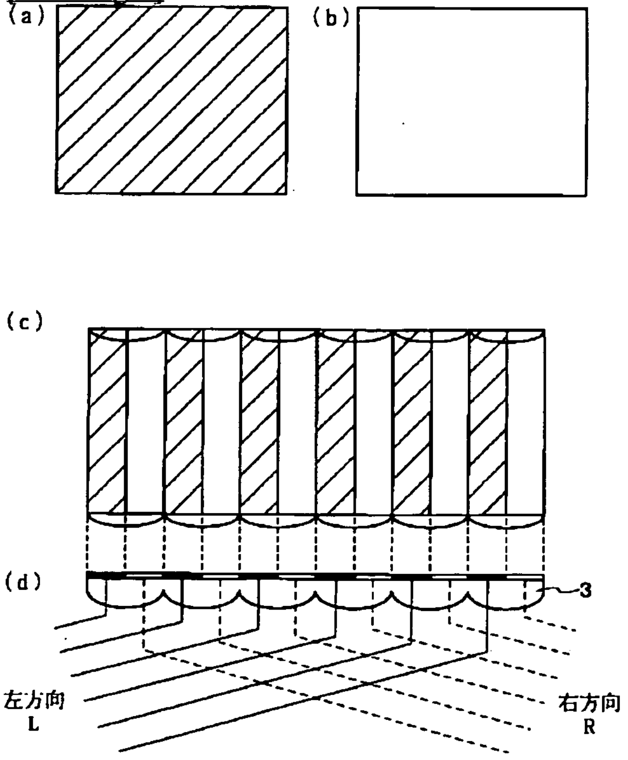
DRAWINGS

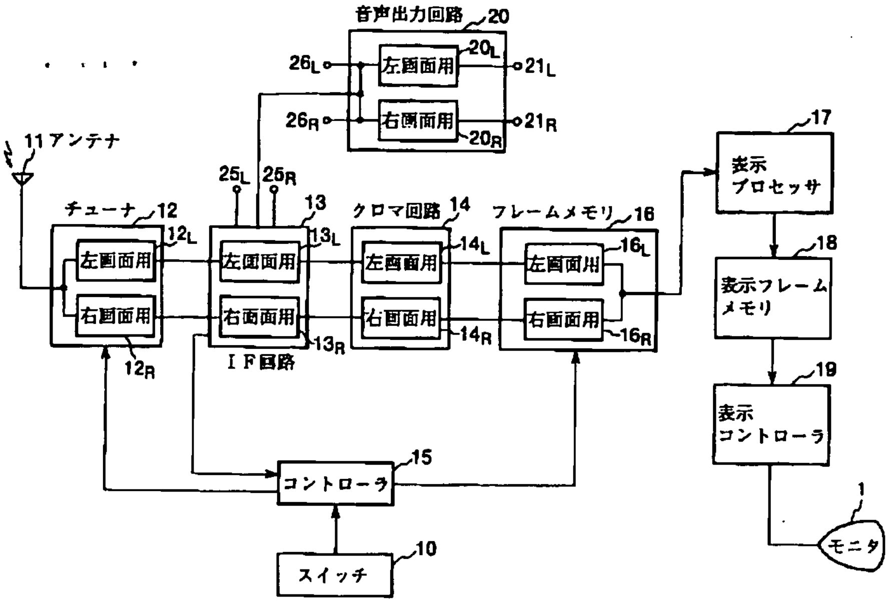
[Drawing 1]



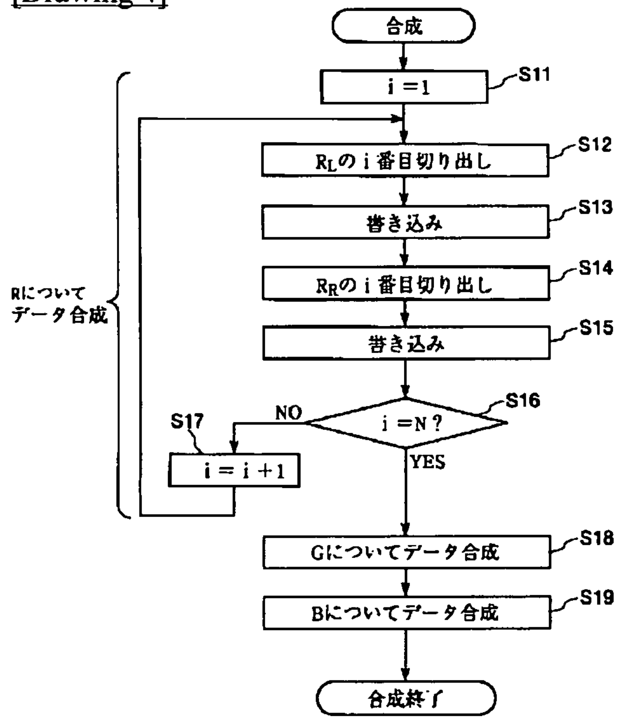
[Drawing 2]



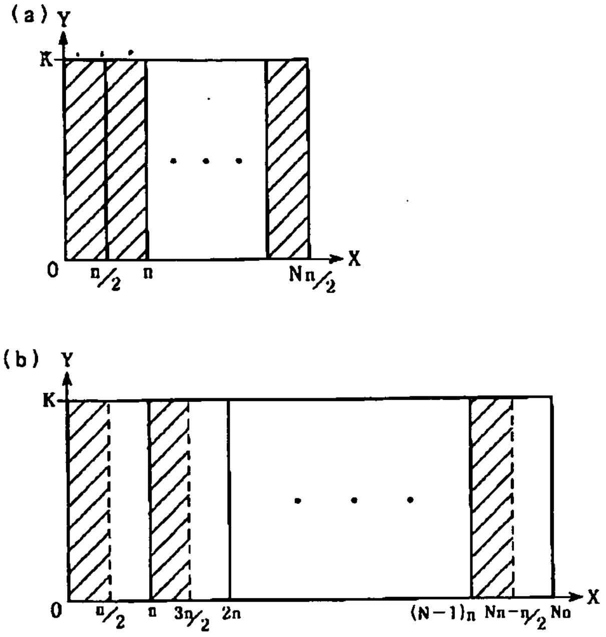
[Drawing 3]


音声出力回路
20
20L
左画面用
右画面用
20R
26L
26R
21L
21R
11 アンテナ
チューナ
12
12L
12R
左画面用
右画面用
25L
25R
13
13L
13R
I F回路
クロマ回路
14
14L
14R
フレームメモリ
16
16L
16R
17
表示プロセッサ
18
表示フレームメモリ
19
表示コントローラ
1
モニタ
15
コントローラ
10
スイッチ

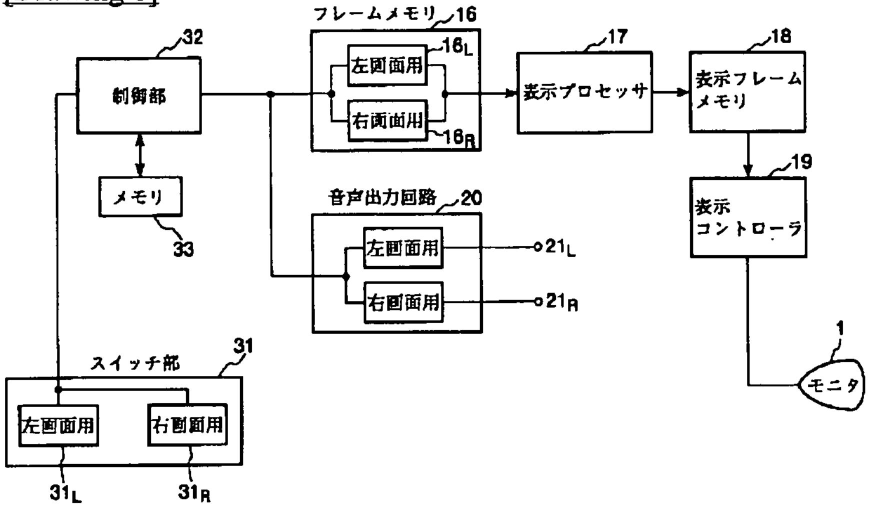
[Drawing 4]


合成
i＝1
S11
RLのi番目切り出し
S12
書き込み
S13
RRのi番目切り出し
S14
書き込み
S15
i＝N？
S16
NO
YES
S17
i＝i＋1
Rについてデータ合成
Gについてデータ合成
S18
Bについてデータ合成
S19
合成終了

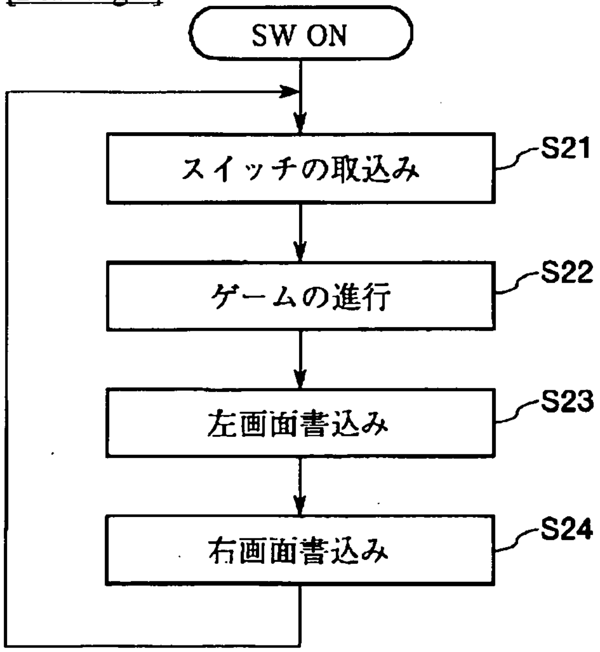
[Drawing 5]


(a)
Y
K
0
n/2
n
Nn/2
X
(b)
Y
K
0
n/2
n
3n/2
2n
(N−1)n
Nn−n/2
Nn
X

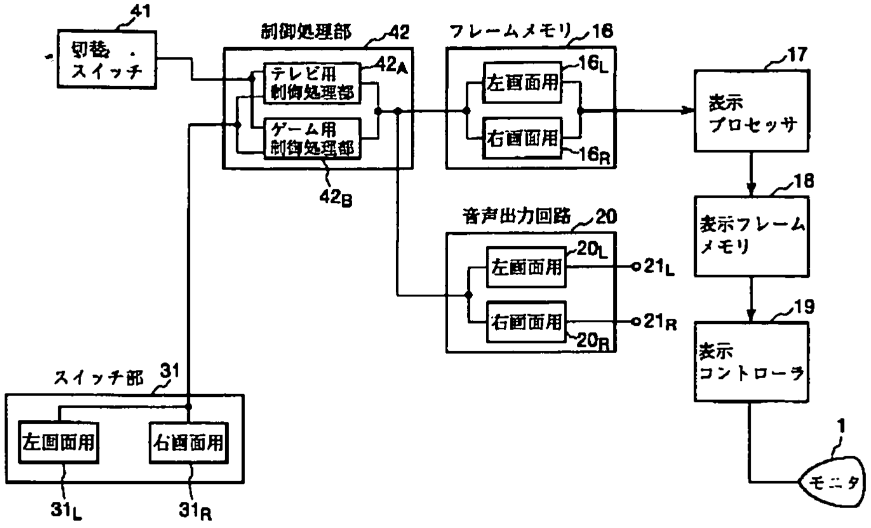
[Drawing 6]


フレームメモリ
16
16_L
左画面用
右画面用
16_R
17
表示プロセッサ
18
表示フレームメモリ
19
表示コントローラ
1
モニタ
32
制御部
メモリ
33
音声出力回路
20
左画面用
右画面用
21_L
21_R
スイッチ部
31
左画面用
右画面用
31_L
31_R

[Drawing 7]


SW ON
スイッチの取込み
S21
ゲームの進行
S22
左画面書込み
S23
右画面書込み
S24

[Drawing 8]


41
切替・スイッチ
制御処理部
42
テレビ用制御処理部
42_A
ゲーム用制御処理部
42_B
フレームメモリ
16
左画面用
16_L
右画面用
16_R
17
表示プロセッサ
18
表示フレームメモリ
19
表示コントローラ
1
モニタ
音声出力回路
20
左画面用
20_L
右画面用
20_R
21_L
21_R
スイッチ部
31
左画面用
右画面用
31_L
31_R

[Translation done.]